K-10-654
#2

Final Report for Period: 09/1999 - 08/2002
Submitted on: 11/29/2002
Principal Investigator: Milchus, Karen .
Award ID: 9976086
Organization: GA Tech Res Corp - GIT
Title:
PPD: Disseminating Information on Accessible Laboratory Experiments

Project Participants

Senior Personnel

Name: Milchus, Karen
Worked for more than 160 Hours: Yes
Contribution to Project:

Name: Goldthwaite, John
Worked for more than 160 Hours: Yes
Contribution to Project:
Co-presenter at training sessions and helped exhibit at conferences. Provided other information about accessibility for the Web site.

Name: McKelvy, George
Worked for more than 160 Hours: No
Contribution to Project:
Co-presenter at conferences; consultant regarding chemistry education.

Post-doc

Graduate Student

Name: Craighill, Sarah
Worked for more than 160 Hours: Yes
Contribution to Project:
Graphics assistance, web site maintenance.

Name: Rinker, Sue
Worked for more than 160 Hours: Yes
Contribution to Project:
Graphics assistance, web site maintenance.

Undergraduate Student

Technician, Programmer

Name: Curtis, Bill
Worked for more than 160 Hours: No
Contribution to Project:
Electronic media developer.

Name: Murphy, Arthur
Worked for more than 160 Hours: No
Contribution to Project:
Electronic media developer.

Name: Todd, Robert

Worked for more than 160 Hours: No

Contribution to Project:
Web developer (replaced Arthur Murphy and Bill Curtis).

Name: White, Elise

Worked for more than 160 Hours: No

Contribution to Project:
Web developer (replaced Arthur Murphy).

Name: Freeman, Josh

Worked for more than 160 Hours: No

Contribution to Project:
Web developer (replaced Bill Curtis).

Other Participant

Research Experience for Undergraduates

Organizational Partners

Science Educ for Students w/Disabilities
Shared exhibit space at three NSTA national conventions. For two of those years, SESD paid for the exhibit (funded by NSF via Greg Stefanich of the University of Northern Iowa) and this project contributed audio visual equipment.

University of Washington
Shared exhibit space and dissemination materials at three NSTA national conventions with the DO-IT program.

University of Northern Iowa
Shared exhibit space and dissemination materials at three NSTA national conventions. For two of these conventions, exhibiting expenses were paid by an NSF grant directed by Greg Stefanich.

West Virginia University
Shared exhibit space and dissemination materials at three National NSTA conventions with Ed Keller's science access program.

Educational Equity Concepts Inc
Shared exhibit space and related expenses for the 2002 NSTA national conference with the Playtime is Science NSF-grant project.

Equal Access to Software and Information
EASI covered travel expenses for this project to present on science access at the Assistive Technology in Higher Education in Boulder, Colorado (Nov. 2001). EASI videotaped the presentation and delivered it over the Internet for greater dissemination.

Other Collaborators or Contacts

On three occassions, Vernier Software loaned about $1000 of equipment (interface boxes and sensors) for hands-on training sessions conducted at conferences.

Activities and Findings

Research and Education Activities:
The goals for the 'Disseminating Information on Accessible Science Experiments' project were 1) to provide training to science teachers and special education teachers via instructional presentations at national and regional conferences, and 2) to expand the resource information provided on the Barrier Free Education web site on accommodations for math and science and to promote this resource.

These activities are described in detail in the training and outreach sections.

Findings:

Research was not conducted as part of this project.

Training and Development:

The proposal originally called for this project to conduct presentations / instructional courses at several conferences, particularly at the National Science Teacher Association (NSTA) conventions. Unfortunately, registration for these courses was much lower than anticipated, and several workshops were cancelled by the conference organizers. Workshops were held at two NSTA conferences during the first year of the project, but with the permission of NSF, they were not continued. Instead, this project began to participate in those conferences as exhibitors. We found that we were able to reach a larger number of educators, yet still conduct individual discussions and demonstrations when an educator was particularly interested in disability access. Our exhibiting efforts are described in the Outreach section.

Those workshops that were conducted covered both accommodations for computer-based lab experiments and accommodations for non-computerized labs. Approximately 215 educators were reached through these presentations (70 at hands-on sessions; 145 at lecture-style sessions).

Hands-on workshops on accessible laboratory activities were conducted at the following conferences:
* Regional National Science Teacher Association (NSTA) convention, Detroit, MI, October 1999.
* Regional NSTA convention, Reno, NV, December 1999.
* Technology and Persons with Disabilities (CSUN) conference in Los Angeles, CA, March 2000.
* Biennial Conference on Chemistry Education, Ann Arbor, MI, July 2000.
* Assistive Technology in Higher Education conference, Boulder, CO, November 2001.

Lecture-style presentations were conducted at the following:
* NSTA national convention pre-conference workshop, Orlando, FL, April 2000.
* Training session on assistive technology for TRIO providers -- including a few Science Upward Bound program staff members, Atlanta, GA, May 2000.
* Closing the Gap, Minneapolis, MN, October 2000.
* NSTA national convention, St. Louis, March 2001.

Outreach Activities:

DISSEMINATION AT CONFERENCES

Beginning with the NSTA Regional Conference in Tulsa, we exhibited at many of the conferences at which we had originally planned to give presentations.

Most exhibit visitors received only information about the Barrier Free Education web site -- a resource that they could consult if they had students with disabilities in their class. Generally, about 15-20% of the visitors had specific students in mind and got involved in more detailed discussions about resources and accommodations that were available. Information was solicited from several of the other NSF projects and was disseminated as appropriate to these individuals, along with contact information to specific projects of interest. Administrators and people from teacher education programs picked up resource materials to share with others.

The project independently exhibited at the following conferences:
* NSTA Regional: Tulsa, OK, 1999 (disseminated information to 250 people)
* NSTA Regional: Reno, NV, 1999 (over 130 people)
* American Chemical Society's Biennial Meeting on Chemistry Education, Ann Arbor, MI, 2000 (250 people)
* NSTA Regional: Milwaukee, WI, 2000 (120 people)
* NSTA Regional: Baltimore, MD, 2000 (275 people)
* NSTA Regional: Phoenix, AZ, 2000 (200 people)

The project participated in a shared NSF exhibit at the following conferences:
* NSTA National: Orlando, FL, 2000 (1,100 people)
* NSTA National: St. Louis, MO, 2001 (2,200 people)
* NSTA National: San Diego, CA, 2002 (1,010 people)

Materials(approximately 1,200 copies) were also disseminated by Georgia Tech. at several other rehabilitation conferences including CSUN, RESNA, Assistive Technology Industry Association (ATIA), the World Congress and Expo. on Disabilities, and the Rocky Mountain AT Act Project's annual conference.

Altogether, information was disseminated to about 6,700 educators, rehabilitation professionals, and people with disabilites and their families.

WEB SITE

The Barrier Free Education Web site had over 81,700 visitors (user sessions) during the three years of this project. Visits increased from 52 per day at the start of the project to 105 per day. The web site had 201,300 'hits' during the past year.

The section of the Web site that has the sample experiments requires that viewers fill out a brief questionnaire. The log shows that about 200 people per year examined the experiments, and that they represent a mix of teachers (science and special education), administrators, students, and parents. There is a fairly even distribution between middle school and high school viewers, with only a few at the college level.

Additional product information, accommodation ideas, resources, and graphical materials were incorporated into the site. In addition, much of this information was added to the databases of a NIDRR-funded web site called assistivetech.net. The assistivetech.net site provides an Internet catalog of assistive technology products. In addition to providing an extra dissemination route for our information, the assistivetech project will take over maintenance and updates of the information for at least another three years beyon the NSF grant period.

Journal Publications

Books or Other One-time Publications

Milchus, K., "Using Computers to Make Science Labs Accessible", (2000). , Published
Bibliography: Proceedings of the Technology and Persons with Disabilities Conference, California State University at Northridge, Los Angeles.

Web/Internet Site

URL(s):
http://barrier-free.arch.gatech.edu/
Description:
This Web site is the primary means of dissemination for this project.

Other Specific Products

Product Type: Data or databases
Product Description:
Product information and publication information have been collected as part of the development of the Barrier Free Education web site.
Sharing Information:
This information has now been added to the databases of the http:/www.assistivetech.net web site, an Internet catalog of assistive technology information. This will provide another means for people to search for accommodation ideas.

Contributions

Contributions within Discipline:
Within the discipline of science education, the project has provided teachers with ideas for how to include students with disabilities in their classes. Information has been provided on assistive technology products, accommodation strategies and resources. Within the discipline of special education, teachers have been made aware of the types of technology used in science labs and the ways in which assistive technology or techniques can be incorporated to make this technology accessible to students with disabilities.

Contributions to Other Disciplines:
The information and resources developed by this project are also useful to rehabilitation professionals who are providing services to schools and students.

Contributions to Human Resource Development:

The project has provided training and resource information to educators on how to include students with disabilities in math and science -- allowing the students to participate more fully in these classes. During the three years of this project, over 81,700 people, many of them educators, have visited the project's Web site. This represents an increase from about 50 visitors per day when the project started to about 100 per day. Training was provided to over 215 educators, and 70 of these individuals had hands-on opportunities to try out equipment and accommodations. One of these training sessions was also delivered over the Internet. Materials were disseminated to over 6,700 people at various regional and national conferences. This information will allow more students to participate in science and higher-level math courses, which will prepare them for careers in science, engineering, and mathematics fields.

Contributions to Resources for Research and Education:

The project has leveraged resources with two NIDRR-funded, Georgia Tech. projects: assistivetech.net and Tech Connections.

As mentioned earlier, much of the information from the Barrier Free Education web site has now been added to the assistivetech.net web site, a resource covering all areas of assistive technology. In addition to providing an additional dissemination route for the information, the assistivetech project will take over maintenance and updates of the information for at least another three years beyond the NSF grant period.

Information from this project has also been used as a resource by Tech Connections, a project that focuses on providing information on assistive technology related to work or transition-to-work. One example of how the science access information has been used involves Tech Connections' technical assistance inquiries from educators and counselors regarding accessible scientific and graphing calculators. Approximately 70 calls involving calculators were received this year alone. Product research from this NSF project was provided to Tech Connections to develop a 'quick reference guide' on this topic, and over 2950 people have accessed the document from the Tech Connections web site this year.

Contributions Beyond Science and Engineering:

Our dissemination activities have included providing educational multi-media companies with information from and referrals to other NSF-funded projects that address disability access.

Categories for which nothing is reported:

Any Journal